LETTERS TO THE EDITORS

EuroQol values for economic modeling quality of life after infrainguinal bypass grafting surgery: a rectification

To the Editors:

In the May edition of the *Journal of Vascular Surgery*, the outcomes of our investigation into the quality of life after infrainguinal bypass grafting surgery were published.[1] Unfortunately, the graph that accompanied the article only contained the EuroQol values for the female patients. Fortunately, the error did not jeopardize the main interpretation of the results because we found no evidence of interaction between gender and group variables. We were interested in differences between groups, and these differences were not influenced by the (constant) differences between sex. Because all the results were interpreted as relative values between patient groups, the constant differences between men and women did not play a role in the formulation of the conclusion. Nevertheless, in the judging of the absolute values of quality of life, the graph suggested a lower average quality of life than was actually measured because women, in general, valued their quality of life lower than men. In other words, the values that were presented in the graph underestimated the average quality of life. This error ranged from 4 to 10 points on a scale from 0 to 100.

Although the low values in the graph did not affect the interpretation of the results of this particular investigation, the values may lead to erroneous conclusions when they are judged as absolute values. In particular, this situation may arise when these values are used in cost-effectiveness analyses and in the economic modeling of outcomes. In a cost-effectiveness analysis, the outcomes of an intervention are compared with other health care interventions. Obviously, if the low values that were presented in the original graph are used, then the conclusions of such comparisons may be erroneous. This observation applies particularly to the EuroQol data because these values are often used in economic evaluation and modeling. For this reason, we present the EuroQol values for both men and women in Table I.

Table I presents two different EuroQol scores on the basis of a multilevel analysis.[1] The EQ_{VAS} is the value that patients attribute to their own current health state with the placement of a mark on a visual analogue scale, labeled from 0 (worst imaginable health state) to 100 (best imaginable health state). These values represent the patient's perspective. The EQ-5D$_{index}$ is a weighted aggregated score for the five EuroQol dimensions of quality of life. This index score is based on the values of the general public and therefore represents the societal perspective, which is the preferred perspective in the economic evaluation of health care. In this case, the weighing was on the basis of responses from a sample of 3000 households in the United

Table I. Quality of life after infrainguinal bypass grafting on the basis of the EuroQol questionnaire

	Women		*Men*	
	Mean score	*95% CI*	*Mean score*	*95% CI*
EQ-5D$_{index}$				
Patent graft	0.63	0.59 - 0.66	0.71	0.67 - 0.74
Asymptomatic occlusion	0.59	0.50 - 0.68	0.67	0.58 - 0.76
Symptomatic occlusion	0.52	0.45 - 0.58	0.60	0.53 - 0.66
Revascularization	0.53	0.49 - 0.57	0.61	0.57 - 0.65
Primary amputation	0.43	0.33 - 0.53	0.51	0.41 - 0.61
Secondary amputation	0.33	0.24 - 0.43	0.41	0.32 - 0.51
Cerebrovascular accident	0.40	0.29 - 0.51	0.48	0.37 - 0.59
Myocardial infarction	0.51	0.37 - 0.65	0.59	0.45 - 0.73
EQ$_{VAS}$				
Patent graft	64.49	62.08 - 66.90	70.00	67.59 - 72.41
Asymptomatic occlusion	64.90	59.12 - 70.68	70.41	64.63 - 76.19
Symptomatic occlusion	57.62	53.35 - 61.89	63.13	58.86 - 67.40
Revascularization	61.06	58.29 - 63.83	66.57	63.80 - 69.34
Primary amputation	59.72	53.37 - 66.07	65.23	58.88 - 71.58
Secondary amputation	55.09	48.99 - 61.19	60.60	54.50 - 66.70
Cerebrovascular accident	49.44	41.83 - 57.05	54.95	47.34 - 62.56
Myocardial infarction	52.46	43.00 - 61.92	57.97	48.51 - 67.43

CI, Confidence interval.

Kingdom.[2] This EQ-5D$_{index}$ has a range from –1.00 to 1.00, in which the value 1.00 represents health without morbidity, 0.00 represents morbidity with the same value as death, and –1.00 is the lowest value for health states with values lower than death. These values are based on time trade-off, which makes them especially suitable for the analysis of quality-adjusted life years. When the EuroQol values are used in a model, the values should be weighed for the proportion of male and female patients.

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2. Dolan P. Modeling valuations for the EuroQol health states. Med Care 1997;35:1095-108.

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Regarding "A prospective study to assess changes in proximal aortic neck dimensions after endovascular repair of abdominal aortic aneurysms"

To the Editors:

We read with interest the article by Dr Stuart R. Walker and colleagues (J Vasc Surg 1999;29:625-30) regarding the dimensions of the proximal aortic neck after endovascular repair. The growth of the proximal endograft fixation area is one of the most important potential risks of long-term failure of this new form of treatment. We have performed a similar study in 33 of our patients, and we found significant increases after 6 and 12 months of follow-up examination. This has been in agreement with similar reports.[1-3] Contrary to these earlier studies, Walker and colleagues found no significant changes of the proximal neck.

Although our own study may appear to have limited numbers at first glance, we only included the patients with at least 6 months of follow-up examination because we were interested in the long-term changes. In Walker's study, only 30 of 112 patients had a follow-up period of at least 6 months. The added 82 patients with less than 6 months of follow-up examination are of no value to their analysis, and the limited number of patients with a longer follow-up period is probably the most important reason why their study results are negative. Apart from this type II statistical error, we believe that there are several other reasons why the study results are false negative.

The measurements were done at levels that were relative to the renal artery and not relative to the stented area. As a consequence, the dataset of each level contains the measurements of both stented and nonstented necks. Because the presence of an attachment system and its radial force is likely to have an impact on the local neck dimensions, this method leads to an underestimation of the local effect of the radial force. The authors should at least have included one set of measurements at the level of the attachment frame in all the patients.

Despite the relatively small number of patients available with at least 2 years of follow-up examination, we were surprised to find an almost significant ($P = .06$) increase of 3.4 mm at level "D2b", 5 mm below the lowest renal artery. The designation of such a change as nonsignificant is, in our view, a false interpretation of the statistical test.

Although their method is not described exactly, the measurements appeared to have been taken off of three-dimensional reconstructions. We agree that the measurements must be taken perpendicular to the vessel axis for which three-dimensional reformats are necessary, but we are unaware of the added value of three-dimensional models and we expect the measurements from cut films to be more accurate.

It is unclear how many patients were excluded from the analysis as the result of untimely death or conversion to conventional repair. This patient group might harbor cases of proximal endograft migration caused by neck dilation and therefore may bias the results to a negative outcome.

Finally, we would like to make the point that neck changes may vary with the type of attachment system used. Stent fixation mechanisms with a high radial force, but also balloon expandable stents, are likely to attain their nominal size quickly after deployment. Because endograft attachment frames are generally oversized relative to the proximal aortic neck diameter, an (intended) elastic stretch of the aorta at that level will occur. Over time, this elastic quality of the stented aorta may wear out and, with this, the frictional forces that keep the stent in place will decline. Although this scenario is theoretical, it illustrates that size measurements at the level of a stent that already reached its maximum size will not show the loss of elastic properties. Consequently, the stability of the size of such an aortic neck may falsely suggest that the endograft fixation may still be adequate.